

New insights into vaccination for HIV

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A group of Australian researchers at the Universities of Melbourne and New South Wales have developed new tools and paradigms to understand immune evasion from HIV. The study, published Friday, January 25 in *PLoS Pathogens*, shows that both prior vaccination and timing influence the rates of immune escape, providing further insight into the effectiveness of T cell immunity to HIV.

An HIV vaccine is urgently needed. A major hurdle is the rapid evolution of HIV and its ability to mutate to escape effective immunity. Low levels of mutant virus cannot be detected with standard techniques, making it difficult to study the evolution of mutant viruses.

The group, led by PhD student Liyen Loh and Dr. Stephen Kent, developed highly sensitive assays to track mutant viruses. They show that vaccination of macaques against SIV (a simian AIDS virus) results in the rapid selection of mutant viruses. In contrast, escape mutants evolve much more slowly when they appear later during infection.

Mutant viruses, however, result in some "fitness" cost and they revert back when transmitted to a new host. Reversion of mutant viruses also follows the same principles – rapid during acute infection and slower during chronic infection. These insights suggest new ways to improve HIV vaccines.

Citation: Loh L, Petravic J, Batten CJ, Davenport MP, Kent SJ (2008) Vaccination and timing influence SIV immune escape viral dynamics in vivo. PLoS Pathog 4(1): e12. doi:10.1371/journal.ppat.0040012



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